THERE IS CLAIMED:

1. An astrometry system comprising an astrometry first telescope having first and second sightlines respectively corresponding to first and second fields of view, a first star detector system in a first focal plane, first optical means adapted to combine first and second light beams from stars in said first and second fields of view and substantially parallel to said first and second sightlines and deliver them to said first star detector system, a second telescope having a third sightline substantially parallel to one of said first and second sightlines, a second star detector in at least one second focal plane, second optical means adapted to collect a third light beam from said stars substantially parallel to said third sightline and deliver it to said second star detector, and processor means adapted to determine the source field of view of each star detected as a function of whether it is detected either by only said first detector or conjointly by said first and second detectors.
2. The system claimed in claim 1 wherein said first optical means comprise a combination mirror and two plane entry mirrors having normals offset from each other by a first angle substantially equal to half a second angle defined between said first and second sightlines and respectively adapted to receive said first and second light beams and to reflect them toward said combination mirror.
3. The system claimed in claim 1 wherein said first optical means comprise a concave entry mirror having first and second portions having normals each offset by a first angle substantially equal to a second angle defined between said first and second sightlines and respectively adapted to receive and to combine said first and second light beams.
4. The system claimed in claim 2 wherein each plane mirror has a surface area substantially equal to half the surface area of an entry pupil of said astrometry telescope.
5. The system claimed in claim 3 wherein each concave mirror portion has a surface area substantially equal to half the surface area of an entry pupil of said astrometry telescope.
6. The system claimed in claim 2 wherein said second angle is approximately 106°.
7. The system claimed in claim 1 wherein said first detector has a first portion dedicated to detecting stars and connected to said processing

means and a second portion dedicated at least to astrometry.

8. The system claimed in claim 7 wherein said second portion comprises a first subportion dedicated to astrometry and a second subportion dedicated to broadband photometry.
9. The system claimed in claim 1 wherein said second telescope is a spectrometry telescope and said second detector comprises a first portion dedicated to star detection and connected to said processing means and a second portion dedicated to spectrometry.
10. The system claimed in claim 9 wherein said second portion comprises a first subportion dedicated to medium band photometry and a second subportion dedicated to radial velocity spectrometry.
11. The system claimed in claim 7 wherein said first and second portions consist of detectors in the form of charge coupled devices (CCD).
12. An observation satellite comprising a measurement system as claimed in any preceding claim.
13. The satellite claimed in claim 12, adapted to rotate on itself so that said first and second detectors are scanned in accordance with a chosen scanning law.